

AYK REGION

SALMON BOF RPT #11

ARCTIC-YUKON-KUSKOKWIM REGION

SALMON FISHERY REPORT

A REPORT TO THE

ALASKA BOARD OF FISHERIES

December 1975

ALASKA DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

INTRODUCTION

The Arctic-Yukon-Kuskokwim Region is that portion of the state north of the Alaska Range and the Bristol Bay drainage. It includes all of the drainages of the Bering Sea and the Arctic Ocean from Cape Newenham to east of Demarcation Point to the U.S.-Canadian border. In addition, it includes the following Bering Sea Islands: Nunivak, St. Lawrence and St. Matthew. This is the largest management area in the state comprising over 400,000 square miles, which is equal to the combined areas of California, Oregon, Washington and Idaho. The region is subdivided into several management areas or districts as indicated in Figure 1.

There are approximately 30,000-40,000 Eskimo and Indian people in the region, the majority of whom reside in excess of 110 small villages scattered along the coast and the major river systems. Nearly all of these native people are dependent to varying degrees on the fish and game resources for their livelihood.

REGIONAL SUMMARY

Commercial Fishery

A harvest of 2.3 million salmon was made in the region during 1975 which was exceeded only by the record catch made in 1974 of 2.4 million fish. Catches of chum salmon were also the largest ever recorded. The 1975 harvest represented 17.9 million pounds (round weight) of salmon. Fishermen earnings totaled \$4.8 million.

The 1975 commercial catches made in each management area are shown below:

<u>Area</u>	<u>King</u>	<u>Red</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
Kuskokwim	27,900	18,000	112,200	1,000	225,100	384,200
Yukon	62,500		2,300		988,600	1,053,400
Norton Sound	2,300		6,100	32,400	215,600	256,400
Kotzebue					560,600	560,600
Totals, 1975	92,700	18,000	120,600	33,400	1,989,900	2,254,600
Previous season record	161,500	29,000	198,500	208,600	1,870,200	2,436,700
5-year average (1970-74)	143,400	11,400	109,500	80,000	1,014,300	1,358,600

Commercial harvests in the region have increased about thirty times since 1960. Recent increases have been largely due to development of chum salmon fisheries in the Yukon River, Kuskokwim River and Kotzebue areas.

The region-wide license registration in 1975 of 2,974 commercial, 2,242 vessel and 2,327 gear licenses was a record high total. License registration in the region increased at a rate of about 6 percent annually during the 1968-72 period. During the 1973-75 period vessel and gear license registration increased 19 and 11 percent annually respectively over that for the previous five years. Most of this increase was in the Kuskokwim, Kotzebue and upper Yukon areas. This expansion is largely the result of increasing numbers of subsistence fishermen who are beginning to also participate in the commercial fishery. The vast majority of commercial fishermen are Eskimo and Indian residents of the region.

Trends in license registrations and commercial harvests in the region during 1960-1975 are illustrated in Figure 2.

Figure 3 shows commercial, subsistence and total catches of king and other salmon species made in the region during 1960-1975.

The decline in subsistence utilization has resulted in the Department allowing greater commercial harvests, especially of chum salmon. Department studies have revealed that unharvested surpluses of pink and chum salmon exist in some areas. In addition there has been increased demand from Japanese markets for fresh frozen A-Y-K salmon. Barring significant increases in offshore utilization by foreign nations or unusually severe environmental conditions, the A-Y-K commercial salmon fishery can be expected to increase moderately in terms of production and economic value during the next few years.

Subsistence Fishery

Subsistence harvest information prior to 1960 is incomplete or entirely lacking for many years, but there are also records indicating that in excess of two million salmon annually were taken during the early 1900's.

About 1930 the airplane began replacing the sled dog as a mail carrier, and this started the gradual decline of the subsistence salmon fishery. This decline has been accelerated in the past few years as increased welfare payments and employment opportunities, including commercial fishing activities, have become available to the native people. Another very important factor tending to affect subsistence fishing effort during recent years is the increasing use of snow vehicles which may be replacing sled dogs at a faster rate than did the airplane. Since considerable numbers of salmon and other fish are fed to sled dogs, fewer fish will be required for subsistence purposes as the canine population declines. The decline in subsistence fishing is not related necessarily to fish abundance, but mainly reflects decreases in effort and dependence due to a changing way of life.

Subsistence catch data for 1975 is very preliminary at this time since a few late catch reports are still being received. The projected 1975 harvest should approximate 530,000 salmon, a decrease of 170,000 compared to the 1974 catch. The average annual subsistence harvest recorded during 1960-74 was 600,000 salmon (Figure 3).

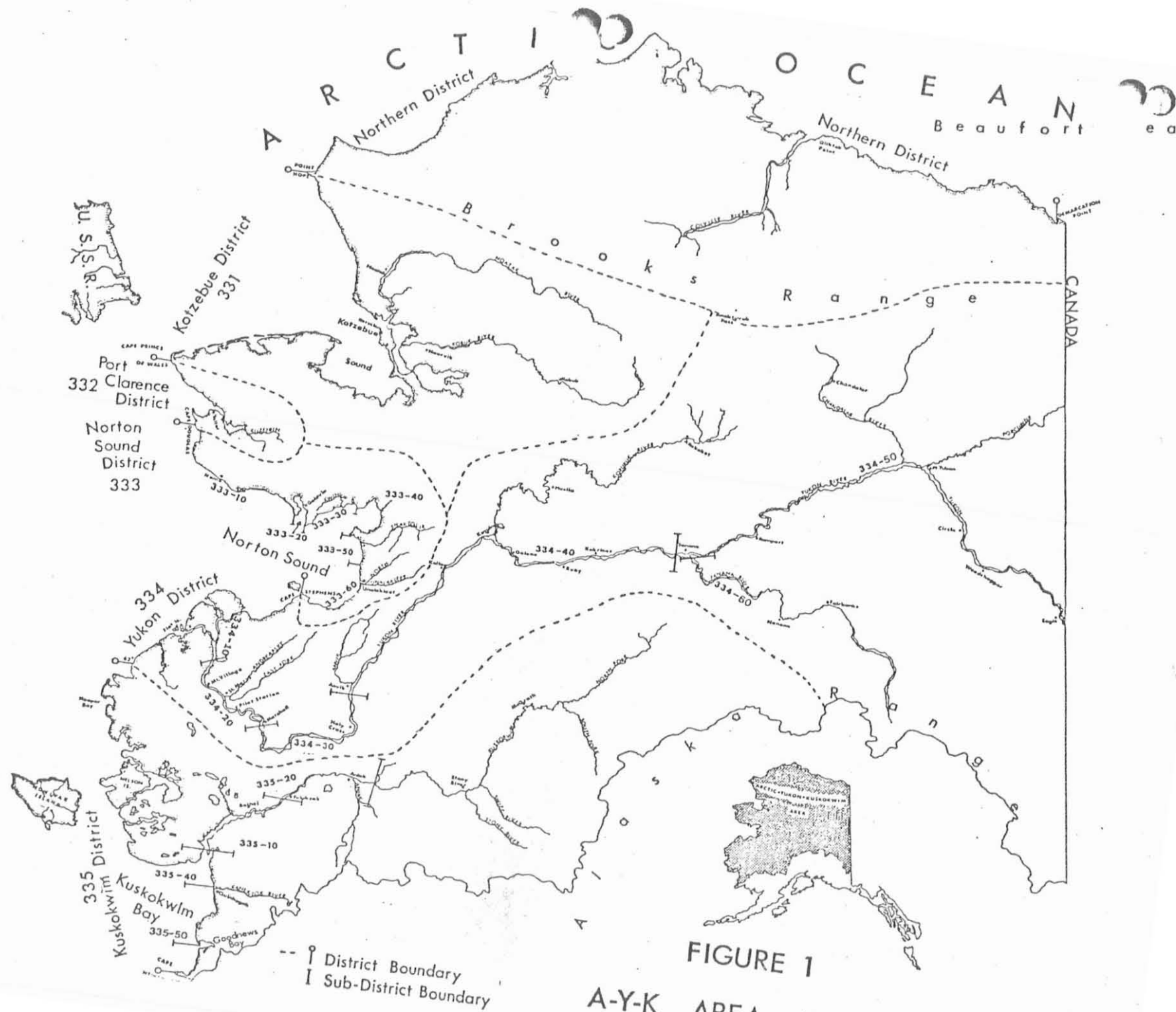


Figure 2. Total commercial salmon catch and fishing vessel registration for the Arctic-Yukon-Kuskokwim region, 1960-1975.

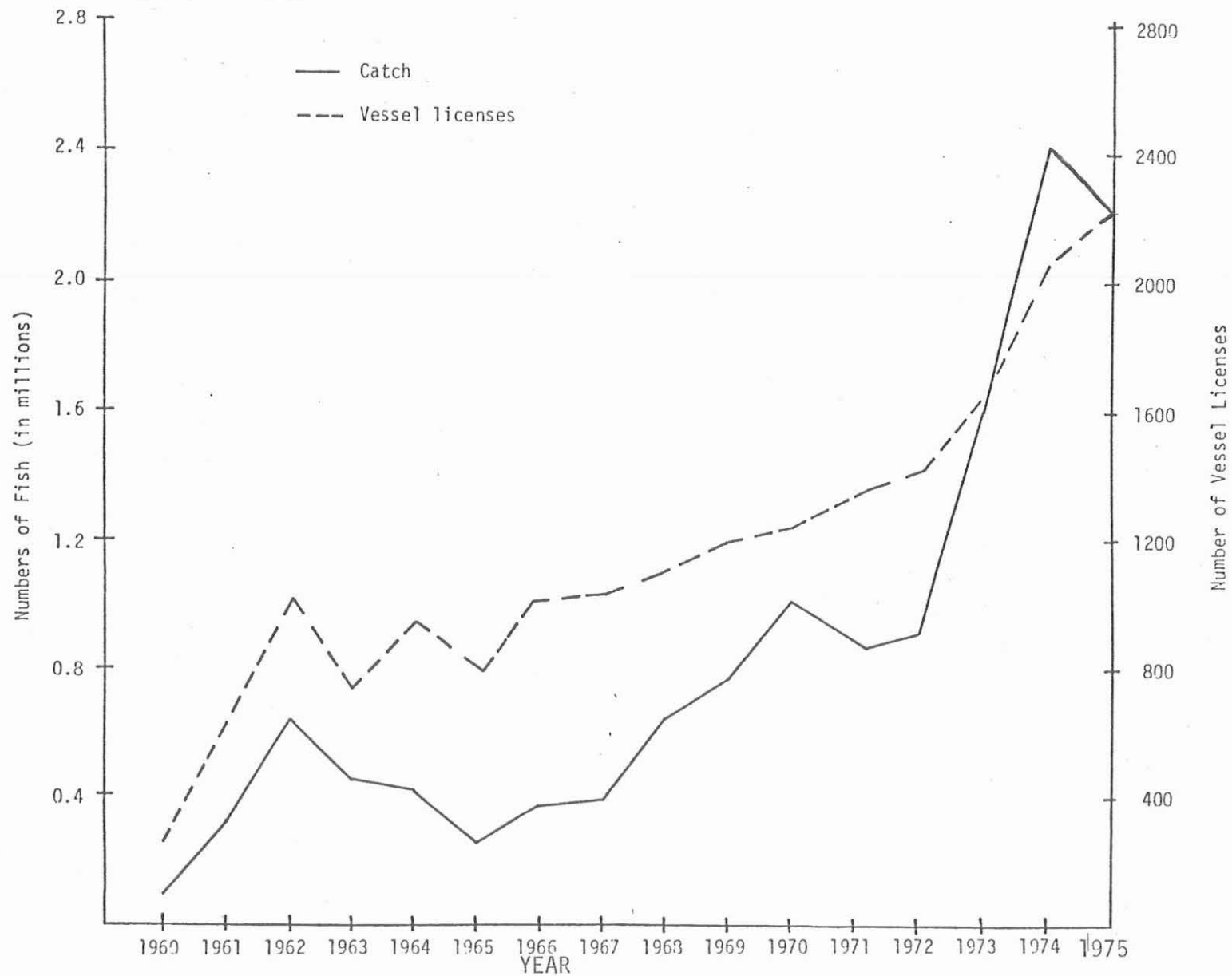
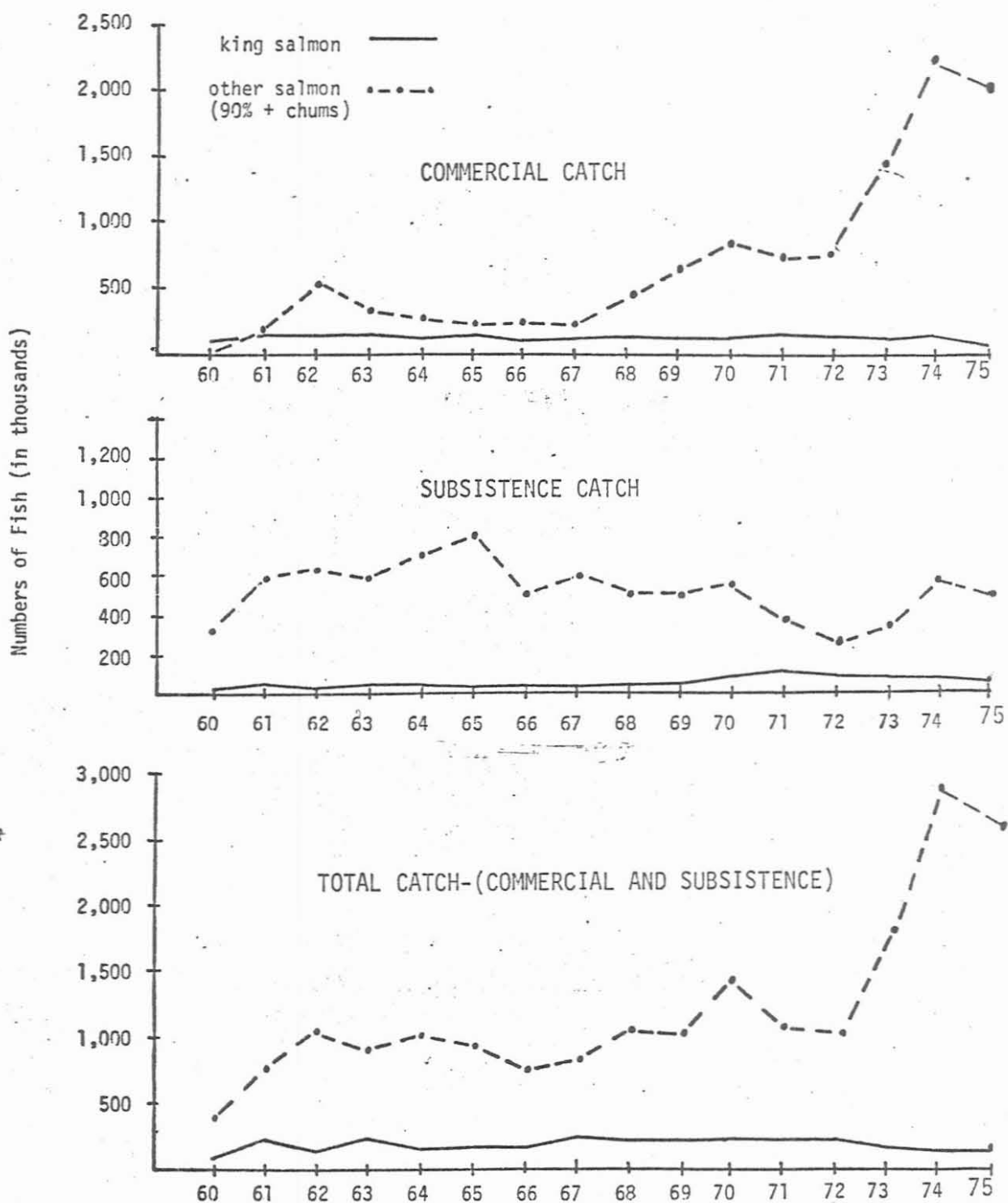


Figure 3. Commercial, subsistence and total catch in numbers of salmon for the Arctic-Yukon-Kuskokwim region, 1960-1975.



ARTIC YUKON KUSKOKWIM REGION
SALMON FISHERY/STOCK STATUS REPORTS

A Y K FISHERY/STOCK STATUS REPORTS (page 3)

- | | | |
|-----|---|---------------|
| 30. | Incidental Trawl Catches of Chinook Salmon in
Relation to Western Alaska Chinook Salmon Fisheries
October, 1980 | Arvey, Geiger |
| 31. | Status of Salmon Stocks, Fisheries and Management
Programs in the Yukon River, October, 1980 | Arvey |

Kuskokwim District

The 1975 Kuskokwim district commercial salmon harvest of 384,196 fish was the third largest catch ever recorded, but the total fell 22.4 per cent below the record 1974 harvest. Species composition was 28,278 king, 18,036 red, 111,763 coho, 963 pink and 225,156 chum salmon. Table 4 presents commercial catches for the Kuskokwim River, Quinhagak and Goodnews Bay subdistricts.

License registration dropped below record 1974 levels, but remained the second highest on record. Commercial license registration decreased slightly (3.4 per cent) to 1,099, while vessel licenses decreased 11.1 per cent to 804 licenses. Gear licenses (set and drift combined) fell 9.8 per cent below 1974 levels to 832 units of gear.

Kuskokwim River

The 1974 and 1975 king salmon runs have been characterized by significant decreases in the more older age classes (6₂ and 7₂), decreases in the number of female kings and below average escapements. At the same time, commercial effort and efficiency have increased tremendously. In an effort to insure adequate escapements, the 1975 commercial king salmon harvest goal was reduced by 50 per cent, from 30-40,000 kings to 15-20,000 kings. Price disputes between fish buyers and commercial fishermen minimized effort and catches during the first two commercial periods, however, a record-setting twelve-hour catch brought the total harvest to 22,135 king salmon. Preliminary data indicates that the large catch was due primarily to an intense commercial effort and not to increased numbers of kings.

Although the commercial chum salmon fishery has increased tremendously since its inception in 1971, the subsistence fishery is still of prime importance. Commercial and subsistence effort and catches have increased greatly in recent

years, resulting in the institution of a combined harvest goal of approximately 400,000 fish for the 1975 season. Although this season's chum salmon run was judged above average, the record harvest of 184,177 fish was strongly influenced by a commercial effort that has increased 58 per cent since 1973. Due to the increased effort and efficiency of the fleet, commercial periods were reduced from 12-hour to 6-hour duration. When commercial catches are added to subsistence catches, the total utilization of 360,566 was the second largest documented catch since 1960 (Table 4).

Although commercial fishing effort reached record levels, the 1975 commercial coho salmon catch of 84,120 fish was 42.9 per cent below the previous record 1974 catch of 147,260 cohos. The catch was actually lower than indicated, as there was a strong concurrent run of fall chums which were not well separated from cohos by the buyers.

The Kuskokwim River subsistence king salmon harvest of 47,569 kings was 78.4 per cent above the record low 1974 catch and was above the recent 5-year average catch of 43,493 fish. The increased catch may have been an incidental result of the commercial price disputes when there was no appreciable commercial subsistence harvests. In any case, fishermen interviews indicate many of the kings were small males captured in chum salmon gear.

The subsistence chum salmon harvest of 176,595 fish was 5.9 per cent below the recent 5-year average catch of 187,737 chums. Decreases in the chum salmon harvest may have been due to the increased king salmon harvest, excessive numbers of fish remaining from the 1974 catch and from regulatory controls placed upon the sales of subsistence salmon roe.

The sale of subsistence salmon roe was allowed under strict management and regulatory controls during 1975. A total of 22,113 pounds of king salmon roe, 57,373 of chum roe and 255 pounds of coho roe were sold. The catch represented

29,622 kings, 183,280 chums and 850 coho salmon. Preliminary information indicates that subsistence harvests decreased tremendously when the roe sales were terminated by emergency order on July 14. This tends to infer the presence of a "roe fishery" during 1975.

Due to weather and water conditions index surveys are very difficult, however, several streams were surveyed in 1975. Once again, aerial surveys did not indicate any large spawning concentrations of king salmon. The Kogrukluk River counting tower count decreased sharply from 1974 levels. As in 1974, a majority of the fish passing the tower were small kings and contribute little to future run productivity. Table 6 presents comparative index counts.

Escapements of chum and red salmon were judged as good. The Kogrukluk River tower count of 8,290 was the second largest ever recorded, while the red salmon count was the largest on record.

Quinhagak and Goodnews Bay

These two fisheries are located south of the Kuskokwim River (Figure 1). Fishermen in these subdistricts are restricted to the use of gill nets of less than 6-inch stretched mesh. A total of 6,143 kings, 18,572 reds, 27,643 cohos, 958 pinks and 40,985 chums, totaling 94,301 fish were harvested in 1975. Due to the absence of fish buyers early in the season and to price disputes, commercial fishing did not get under way until after July 1, when the majority of the king salmon had entered the Kanektok and Goodnews Rivers. Harvest of other species, except pink, were average.

Although escapement information is limited, escapements of all species except king salmon in the Kanektok River were judged average or below average. Escapements of king salmon in the Goodnews River were very poor.

Proposals-1975

Tremendous increases in commercial effort and fleet efficiency pose a serious threat to the depressed king salmon run and add increased pressure to the chum salmon. During the 1975 season, the staff reduced fishing period durations by emergency order; we have presented a proposal which would reduce the length of future commercial periods by regulation. The staff has also presented a proposal to stabilize the efficiency of the fleet, by providing for gear depth limitations, as are found in most fisheries in the state.

Table 4. Kuskokwim River commercial and subsistence harvests, 1960-75.

Year	Commercial ^{1/}	Kings Subsistence ^{2/}	Total	Commercial ^{1/}	Other Salmon ^{3/} Subsistence ^{2/}	Total
1960	5,969	20,931	26,900		327,297	327,297
1961	18,918	31,136	50,054		185,447	185,447
1962	15,341	14,656	29,997		165,626	165,626
1963	12,016	34,615	46,631		141,550	141,550
1964	17,149	29,017	46,166		189,660	189,660
1965	21,989	27,143	49,132		283,459	283,459
1966	25,545	49,606	75,151		174,660	174,660
1967	29,986	57,875	87,861	148	205,263	205,411
1968	24,278	30,230	64,508	187	260,023	260,210
1969	43,997	40,138	84,135	7,165	198,628	205,793
1970	39,290	69,219	108,509	1,165	245,550	247,214
1971	40,274	42,926	83,200	68,914	116,391	185,305
1972	40,795	40,145	80,940	78,619	120,316	198,935
1973	32,838	38,526	71,364	148,746	179,259	328,005
1974	18,564	26,665	45,229	171,887	277,170	449,057
1975 ^{4/}	22,135	47,569	69,704	184,177	176,389	360,566

1/ Subdistricts 335-10, 335-20 and 335-30.

2/ Catches are expanded and include all villages surveyed each year. Data includes a few villages not included in Annual Report catch tables.

3/ Primarily chums.

4/ Preliminary data.

Table 5. Kuskokwim River commercial effort data, 1965-75^{1/}

Year	King	Chum	Coho
1965	195		
1966	210		107
1967	233		147
1968	303		242
1969	329		231
1970	361		266
1971	418	216	83
1972	405	176	245
1973	456	341	411
1974	606	467	516
1975	541	539	531

^{1/} Number of actual fishing vessels

Table 6 . Index counts of Kuskokwim River king salmon spawning escapements, 1965-1975 ^{1/}

Year	Aerial Surveys				Counting Tower
	Kisaralik River	Aniak River (Above Salmon R.)	Chukowan River	Kogrukluuk River	Kogrukluuk River
1965	194 ^{2/}	-	-	-	-
1966	204 ^{2/}	485	986	1,645	-
1967	-	758 ^{2/}	-	1,033	-
1968	487	783	1,260	2,180	-
1969	-	537	-	-	2,980
1970	531	592	1,118	1,598	3,815
1971	-	144 ^{2/}	-	636 ^{2/}	-
1972	-	93 ^{2/}	163 ^{2/}	476 ^{2/}	1,934
1973	152	200 ^{2/}	229	610 ^{2/}	1,725
1974	4 ^{2/}	15 ^{2/}	43 ^{2/}	-	3,410
1975	129 ^{2/}	145	667	1,062	1,970

^{1/} ADF&G Annual Management Report, Arctic-Yukon-Kuskokwim area, 1971.

^{2/} Surveys rated poor.

YUKON AREA

The Yukon area includes all waters of the Yukon River drainage in Alaska and all waters from Cape Stephens southward to 62° North latitude. Commercial salmon fishing is allowed along 1,400 river miles in six subdistricts managed under various regulations (Figure 1).

The 1975 commercial harvest of 1,053,426 salmon was the largest in history and nearly double the previous 5-year average of 575,134. The 1975 catch exceeded the previous record total of 991,095 in 1974. Species composition of the 1975 catch was 62,521 kings; 2,340 cohos and 988,565 chums. Table 7 presents annual commercial catches by subdistrict since 1960. Yukon River commercial fishermen received an estimated \$1,960,000 for their catch and the first wholesale value of the pack was estimated at \$5,500,000.

A total of 1,182 commercial, 979 vessel, 733 set gill net and 310 drift gill net licenses was issued for the area in 1975. Also, more than 100 fishwheels (which are legal gear but license fees are not required) were operated. License registration for all types of gear except drift nets were at record levels in 1975. The greatest increase in license registration occurred in the upper Yukon area (subdistricts 4, 5 and 6) where the commercial fishery is undergoing rapid expansion.

The 1975 Yukon River commercial king salmon catch was the lowest since statehood and was approximately 38,900 less fish than the previous 14-year average. Due to the indicated poor strength of the king run, based on comparative catch data, fishing time was reduced to two days a week during the latter portion of the run. The season in the lower river was closed during late June in order to provide for adequate escapements.

The 1975 commercial chum salmon catch was the largest in history (13 percent greater than record 1974 catch of 877,368) and exceeded the previous 5-year average by 524,655 fish. The record chum catch this year was attributed to the exceptional large run of summer chums and to a lesser extent on the above average run of fall chums.

Subsistence utilization of summer chums, which are more abundant than the fall run, has decreased in recent years, except in 1974 and 1975 when large runs occurred, due to a decline in effort and dependence. In order to encourage greater commercial harvesting of summer chums, regulations have been relaxed. In 1975, a record total of 743,732 summer chums was commercially harvested in the Yukon area, mostly in subdistricts 1 and 2 where 75 percent of the catch was taken. In these subdistricts, record single period chum catches were made: 113,484 (July 7-9, sub-district 1) and 36,396 (July 3-4, subdistrict 2). Also a record summer chum catch of 165,177 fish was taken during the season in subdistrict 4 where fishing effort tripled compared to the previous year. The regulation requiring a maximum 6-inch mesh net size after July 2 in sub-districts 1 and 2 resulted in an additional catch of 303,258 summer chums during the early portion of the fall season (July 3-12) yet resulted in a minimal take of king salmon (3,855 fish).

The Department is proposing a regulation change in subdistrict 3, where there is a developing interest in the commercial utilization of chum salmon, to allow the use of 6 inch maximum mesh size gill nets in early July. This regulation change would result in a larger harvest of summer chums which are abundant in early July and at the same time minimize the harvest of the late run of king salmon.

A total of 244,833 fall chums was harvested in the Yukon area in 1975, compared to the record catch of 273,158 in 1974. The Yukon River fall chum fishery has expanded rapidly in recent years. The Department

has established a 250,000 optimum fall chum salmon harvest goal until future returns from current harvest levels can be evaluated. Effective beginning with the 1974 season the Board established quotas of 200,000 chum salmon for the lower three subdistricts (combined) and 50,000 combined chum and coho salmon for the upper three subdistricts. Several public proposals have been submitted to the Board which advocate either increasing and/or reallocating fall chum and coho salmon quotas in the upper Yukon area.

The 1975 commercial coho salmon catch was 17,689 less fish than the previous 5-year average. The commercial fishery in subdistricts 1,2 and 3 was closed by emergency order in mid August when the 200,000 chum salmon quota was taken, at which time the coho run was just beginning. A substantially larger coho salmon catch would have been taken if the fishery continued through August. Cohos are generally of minor importance and are taken incidentally to the more abundant fall chum salmon.

Subsistence catches tabulated to date total 15,000 king and 240,000 other salmon, primarily chums. The final 1975 "other salmon" harvest is expected to be the second largest since 1967 and is attributed to the very large run of summer chums (Table 8).

King salmon escapements in index spawning areas varied from below average to average (see Table 9).

Good comparative data is lacking for chum salmon escapements. Summer chum escapements were judged exceptionally strong throughout the drainage based on selected surveys. Table 10 presents comparable escapement data in various index streams. In the Anvik River system a minimum estimated escapement of 845,000 chums was observed. Throughout the Yukon River drainage nearly 2 million summer chums were documented in selected escapement surveys. During the past four years the department has initiated intensive surveys of fall chum and coho salmon spawners in the upper Yukon River drainage. In 1975, excellent escapements of

fall chums were documented in the Toklat (78,300), Sheenjek (78,100), and Fishing Branch Rivers (336,000). Due to inclement weather conditions, it was not possible to assess escapements of fall chums in the upper Tanana River drainage (Table 11).

Tanana River drainage, coho salmon escapements as indicated by surveys of the Clearwater Lake and Delta Clearwater River systems, appeared excellent.

Table . Commercial salmon catches by species and subdistrict, Yukon district, 1960-1975

KING SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	50,713	15,994	-	66,707	-	-	-	884	67,591
1961	84,463	29,028	4,965	118,456	-	-	-	1,804	120,260
1962	67,099	22,224	4,687	94,010	-	-	-	724	94,734
1963	85,004	24,211	6,976	116,191	-	-	-	803	116,994
1964	67,555	20,246	4,705	92,506	-	-	-	1,081	93,587
1965	89,268	23,763	3,204	116,235	-	-	-	1,863	118,098
1966	70,788	16,927	3,612	91,327	-	-	-	1,988	93,315
1967	104,359	20,289	3,618	128,257	-	-	-	1,449	129,706
1968	79,465	21,392	4,543	105,400	-	-	-	1,126	106,526
1969	70,862	14,799	3,577	89,238	-	-	-	985	90,223
1970	57,681	17,210	3,712	78,603	-	-	-	1,666	80,269
1971	86,042	19,226	3,490	108,758	-	-	-	1,749	110,507
1972	70,052	17,855	3,841	91,748	-	-	-	1,092	92,840
1973	56,981	13,859	3,204	74,044	-	-	-	1,309	75,353
1974	71,067	17,587	3,413	92,067	679	2,661	1,495	4,835	96,902
1975	45,197	9,824	3,913	58,934	389	2,798	400	3,587	62,521

COHO SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	-	-	-	-	-	-	-	-	-
1961	2,855	-	-	2,855	-	-	-	-	2,855
1962	22,926	-	-	22,926	-	-	-	-	22,926
1963	5,572	-	-	5,572	-	-	-	-	5,572
1964	2,446	-	-	2,446	-	-	-	-	2,446
1965	350	-	-	350	-	-	-	-	350
1966	19,254	-	-	19,254	-	-	-	-	19,254
1967	9,925	-	1,122	11,047	-	-	-	-	11,047
1968	13,153	-	150	13,303	-	-	-	-	13,303
1969	14,041	-	845	14,886	-	-	-	95	14,981
1970	12,245	-	-	12,245	-	-	-	-	12,245
1971	12,165	-	-	12,165	-	-	-	38	12,203
1972	21,705	506	-	22,211	-	-	-	22	22,233
1973	34,860	1,781	-	36,641	-	-	-	-	36,641
1974	13,761	176	-	13,937	-	1,500	1,388	2,888	16,825
1975	2,282	-	-	2,282	-	5	53	58	2,340

CHUM SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	-	-	-	-	-	-	-	-	-
1961	42,577 ^{1/}	-	-	42,577	-	-	-	-	42,577
1962	53,160 ^{1/}	-	-	53,160	-	-	-	-	53,160
1963	-	-	-	-	-	-	-	-	-
1964	8,347	-	-	8,347	-	-	-	-	8,347
1965	22,936	-	-	22,936	-	-	-	381	23,317
1966	69,836	-	1,209	71,045	-	-	-	-	71,045
1967	46,148	1,425	1,880	49,453	-	-	-	-	49,453
1968	62,852 ^{1/}	1,407	3,136	67,395	-	-	-	-	67,395
1969	184,411	5,024	1,722	191,157	-	-	-	703	191,860
1970	320,138	22,394	3,285	346,357	-	-	-	907	346,724
1971	282,461	6,112	50	288,623	-	-	-	1,061	289,684
1972	250,945	33,805	1,840	286,590	-	-	-	1,254	287,844
1973	395,427	109,041	463	504,931	-	-	-	13,003	517,934
1974	641,052	125,821	2,157	769,030	38,914	28,013	41,411	108,338	877,368
1975	583,715	151,610	5,590	740,915	179,030	35,088	33,532	247,650	998,565

TOTAL SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	50,713	15,994	-	66,707	-	-	-	884	67,591
1961	129,895	29,028	4,965	163,888	-	-	-	1,804	165,692
1962	143,185	22,224	4,687	170,096	-	-	-	724	170,820
1963	90,576	24,211	6,976	121,763	-	-	-	803	122,566
1964	78,348	20,246	4,705	103,299	-	-	-	1,081	104,380
1965	112,554	23,763	3,204	139,521	-	-	-	2,244	141,765
1966	159,878	16,927	4,821	181,626	-	-	-	1,988	183,614
1967	160,423	21,714	6,620	188,757	-	-	-	1,449	190,206
1968	155,470	22,799	7,829	186,098	-	-	-	1,126	187,224
1969	269,314	19,823	6,144	295,281	-	-	-	1,783	297,064
1970	390,064	39,604	6,997	436,665	-	-	-	2,573	439,238
1971	380,668	25,338	3,540	409,546	-	-	-	2,848	412,394
1972	342,702	52,166	5,681	400,549	-	-	-	2,368	402,917
1973	487,272 ^{1/}	124,778 ^{1/}	3,667	615,717	-	-	-	14,312	630,029
1974	725,880	143,584	5,570	875,034	39,593	32,174	44,294	116,061	991,095
1975	631,194	161,434	9,503	802,131	179,419	37,891	33,985	251,295	1,053,426

^{1/} Includes small numbers of pink or red salmon.

Table 8 Yukon River comparative subsistence catch and effort data, 1961-1975 (numbers per fishing family are in parenthesis).

Year	Total Catch		Equivalent Catch ^{1/}		Mean Equivalent Catch per Family ^{1/}	
	King Salmon	Other salmon ^{2/}	King salmon	Other salmon ^{2/}	King salmon	Other salmon ^{2/}
1961	23,719	407,814	23,719	405,632	38	650
1962	19,910	358,441	13,010	329,144	23	583
1963	32,656	421,625	26,141	372,578	44	624
1964	22,817	485,630	19,480	460,712	32	765
1965	19,723	458,379	16,950	436,306	31	806
1966	14,017	214,236	11,507	204,913	23	415
1967	19,661	288,595	16,306	256,926	35	545
1968 ^{3/}	14,832	189,607	11,883	170,522	25	358
1969	14,946	213,725	13,916	195,476	30	426
1970	15,926	223,237	13,474	199,163	34	498
1971	24,755	200,568	21,670	171,247	51	399
1972	19,541	140,102	17,079	119,335	43	298
1973	22,215	186,179	19,458	167,106	42	360
1974	20,543	291,080	16,584	256,636	38	586
1975	15,064	249,087	14,522	216,904	33	492

Year	Fishing families surveyed ^{1/}	People in fishing families ^{1/}	Snowmachines ^{1/}	Sled dogs ^{1/}	Gear operated ^{1/}	
					Gill nets	Fishwheels
1961	624	3,626 (5.8)		4,806 (7.7)	577	169
1962	564	3,279 (5.8)		3,848 (6.8)	613	138
1963	597	3,460 (6.9)		4,155 (7.0)	716	156
1964	602	3,524 (6.0)		4,003 (6.6)	840	155
1965	541	3,453 (7.3)		3,974 (7.3)	647	127
1966	494	3,144 (6.4)		3,112 (6.3)	578	116
1967	471	2,756 (5.9)	192 (0.4)	2,752 (5.8)	530	87
1968	476	3,109 (6.5)	262 (0.6)	2,719 (5.7)	565	71
1969	459	2,974 (6.5)	349 (0.8)	2,442 (5.3)	594	63
1970	400	2,679 (6.7)	346 (0.9)	2,214 (5.5)	647	55
1971	429	2,795 (6.5)	414 (1.0)	1,894 (4.4)	683	56
1972	401	2,508 (6.3)	423 (1.1)	1,375 (3.4)	698	57
1973	463	2,894 (6.3)	485 (1.0)	2,030 (4.4)	840	77
1974	438	2,759 (6.3)	492 (1.1)	1,796 (4.1)	609	83
1975	441	2,646 (6.0)	562 (1.2)	1,909 (4.3)	898	87

^{1/} Data from villages surveyed each year since 1961: Mouth to Fort Yukon and Tanana River (does not include Fairbanks area).

^{2/} Mostly chum salmon, some pinks and cohos.

^{3/} Total king and other salmon catches have been corrected.

Table 9 Comparative Yukon River drainage king salmon escapement counts 1959-1975. ^{1/}

Year	Andreafsky River (East fork)	Andreafsky River (West fork)	Anvik River
1960	1,020	1,220	1,950
1961	1,003		1,226
1962	675 ^{2/}	762 ^{2/}	
1963			
1964	867	705	
1965		355 ^{2/}	650 ^{2/}
1966	361	303	638
1967		276 ^{2/}	336 ^{2/}
1968	380	383	297 ^{2/}
1969	231 ^{2/}	274 ^{2/}	296 ^{2/}
1970	665	574 ^{2/}	368 ^{2/}
1971	1,904	1,284	
1972	798	582 ^{2/}	1,172 ^{4/}
1973	825	788	613 ^{4/}
1974		285	506 ^{5/}
1975	993	301	600

Year	Salcha River	Nisutlin River (Sidney-100 Mile Cr.)	Whitehorse Dam Fishway
1959			1,054
1960	1,660		660
1961	2,878		1,068
1962	937		1,500
1963			484
1964	450		587
1965	408		903
1966	800		563
1967			533
1968	735	407	407
1969	461 ^{2/}	105	334
1970	1,882	615	625
1971	159 ^{2/}	640 ^{3/}	856
1972	1,193	317	392
1973	249	36 ^{2/}	228
1974	1,857	48 ^{2/}	273
1975	1,055	249	312

- ^{1/} With exception of Whitehorse fishway counts, the data was obtained from aerial surveys which were made only of the main stem of each river listed.
- ^{2/} Incomplete survey or poor survey conditions resulting in a very minimal count.
- ^{3/} Environment Canada - Fisheries Service survey.
- ^{4/} Combination tower counts and aerial survey estimates.

Table 10. Comparative Yukon River drainage summer chum salmon aerial survey escapement estimates, 1958-1975.

Year	SUMMER CHUMS			
	Andreafsky River (East Fork)	Andreafsky River (West Fork)	Anvik River	Salcha River
1958			100-200,000	
1959			200,000	
1960	3,830		11,110	670
1961	8,110			1,152
1962	18,040	19,530	20,600	1,161
1963				
1964		12,810	12-14,000 <u>1/</u>	250 <u>1/</u>
1965		14,670 <u>1/</u>	100,000	2,375
1966	25,619	18,145	37,500	2,200
1967		14,495 <u>2/</u>	116,000	
1968	17,600 <u>2/</u>	74,600 <u>2/</u>	51,580 <u>1/</u>	3,790
1969	119,000	159,500		425 <u>1/</u>
1970	84,090	91,710 <u>1/</u>	232,780	7,879
1971	98,095	71,745		306 <u>1/</u>
1972	41,460	25,573	245,857 <u>3/</u>	947 <u>1/</u>
1973	10,149 <u>1/</u>	51,835	86,665 <u>3/</u>	290
1974	3,215 <u>1/</u>	33,258	208,815 <u>4/</u>	8,040 <u>5/</u>
1975	223,485	235,954	845,485	7,573

- 1/ Poor or incomplete survey.
2/ Includes some pinks.
3/ Combined tower and aerial survey estimates.
4/ Tower counts.
5/ Combined aerial and boat surveys.

Table 11. Comparative Yukon River drainage aerial survey estimates, fall chum salmon, 1971-1975. ^{1/}

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Tanana River drainage					
Bear Paw River		<u>2/</u>	1,530	2,996	1,657
Toklat River		1,000 ^{3/}	6,957	34,310	78,285 ^{3/}
Benchmark 735 slough		5,255	127 ^{4/}	1,450	<u>2/</u>
Delta River		3,650	7,971	4,010	2,850 ^{3/}
Tanana River ^{7/}		8,350	5,635	4,567	<u>2/</u>
Bluff Cabin slough		6,040	3,450	4,840	5,000 ^{3/}
Delta Clearwater slough		<u>2/</u>	1,720 ^{3/}	1,235	745
Chandalar River		<u>2/</u>	<u>5/</u>	17,455	6,345 ^{3/}
Porcupine River drainage					
Sheenjek River		<u>2/</u>	1,175 ^{3/}	40,507	78,060
Yukon Territory Streams					
Fishing Branch River	115,000+	35,326 ^{6/}	16,239 ^{6/}	32,500 ^{6/}	336,000 ^{6/}

^{1/} All surveys rated fair - good unless rated otherwise.

^{2/} Not surveyed.

^{3/} Poor survey.

^{4/} Surveyed too early.

^{5/} Surveyed too late.

^{6/} Weir count.

^{7/} Richardson Highway Bridge to Blue Creek.

NORTON SOUND AREA

The Norton Sound District includes all waters from Canal Point Light north to Cape Douglas. This management area is divided into six subdistricts but data presented in this report incorporates catch and escapement data from the entire Norton Sound District.

In 1975, a total of 257,800 salmon of all species was commercially harvested. This harvest is 63 percent above the annual average harvest and the second highest seasonal catch since the inception of the fishery in 1961. The commercial harvest was composed of 2,300 King; 6,200 coho; 32,800 pink and an all time record harvest of 216,400 chum salmon. Comparative catch data is presented in Table 12.

The record chum salmon catch may be attributed in part to unseasonally cold spawning stream temperatures which resulted in the milling of salmon stocks in the commercial fishery and consequently delayed salmon escapements returning to their respective parent streams. Due to the poor escapements which were demonstrated at this time throughout Norton Sound, an emergency order was issued closing the commercial fishery on July 16. By July 20, salmon escapement rates were near normal and the commercial fishery was reopened to commercial fishing by emergency order on July 21.

The coho harvest could have increased had commercial buyers remained in operation through the month of August.

This year the staff is submitting a proposal to reduce areas open to commercial fishing in order to minimize the interception of stocks of fish. These proposals refer to four of the Norton Sound subdistricts where future expansion in previously non-fished coastal areas would promote a stock interception situation.

The 1975 subsistence harvest of 21,905 salmon was 42% below annual average harvest levels and is indicative of the trend of decreased subsistence demand and the increase in job opportunities and full time employment.

A record total of 282 commercial, 244 vessel and 237 set gill net (24,000 fathoms) licenses was issued in 1975. This represents a 13 percent, 25 percent and 24 percent increase respectively over the previous record year of 1974. The rapid increase in participation over the last two seasons is due in part to the emergence of two fishermen's cooperatives.

Pink and chum salmon runs to the majority of Norton Sound streams in 1975 were considered average compared to brood year magnitudes. However, the Kwinuik River escapements were the lowest since 1965. Comparative escapement data is presented for several index streams in Table 13.

Table 12. Commercial and subsistence catches by species, Norton Sound district, 1961-1975.

Year	Commercial						Subsistence				
	King	Red	Coho	Pink	Chum	Total	King	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,237	48,332	101,711	-	-	-	-	-
1962	7,286	18	9,156	33,187	182,784	232,431	-	-	-	-	-
1963	6,613	71	16,765	55,625	154,789	233,863	5	118	16,607	17,635	34,365
1964	2,018	126	98	13,567	148,862	164,671	565	2,567	9,225	12,486	24,843
1965	1,449	30	2,030	220	36,795	40,524	574	4,812	19,131	30,772	55,289
1966	1,553	14	5,755	12,778	80,245	100,345	269	2,210	14,335	21,873	38,687
1967	1,804	-	2,379	28,879	41,756	74,818	817	1,222	17,516	22,724	42,279
1968	1,045	-	6,885	71,179	45,390	124,499	237	2,391	36,912	11,661	51,201
1969	2,392	-	6,836	89,949	82,795	178,972	436	2,191	18,562	15,615	36,804
1970	1,853	-	4,423	64,908	107,034	178,218	561	4,675	26,127	22,763	54,126
1971	2,593	-	3,127	4,895	131,362	141,977	1,026	4,097	10,863	21,815	1/ 37,801
1972	2,885	-	450	45,143	101,235	149,713	756	1,928	12,214	12,942	2/ 27,840
1973	1,918	-	9,282	46,499	119,098	176,797	392	520	14,770	7,185	22,867
1974	2,951	-	2,092	148,519	162,267	315,829	420	1,064	16,426	3,958	21,368
1975	2,321	-	6,218	32,820	216,443	257,802	186	192	15,078	6,449	21,905

Year	Combined					
	King	Red	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,237	48,332	101,711
1962	7,286	18	9,156	33,187	182,784	232,431
1963	6,618	71	16,883	72,232	172,424	268,228
1964	2,583	126	2,665	22,792	161,348	189,514
1965	2,023	30	6,842	19,351	67,567	95,813
1966	1,822	14	7,965	27,113	102,118	139,032
1967	2,621	-	3,601	46,395	64,480	117,097
1968	1,282	-	9,276	108,091	57,051	175,700
1969	2,828	-	9,027	105,511	98,410	215,776
1970	2,414	-	9,098	91,035	129,797	232,374
1971	3,619	-	7,224	15,758	153,177	179,778
1972	3,641	-	2,378	57,357	114,084	177,553
1973	2,310	-	9,802	61,269	126,283	199,664
1974	3,371	-	3,156	164,945	166,225	337,697
1975	2,507	-	6,410	47,898	222,892	279,707

1/ Includes 197 red salmon recorded in all subdistricts.

2/ Includes 93 red salmon in all subdistricts.

Table 13 Comparative aerial survey counts of Norton Sound streams, 1961-1975.^{1/}

Year	King	Chum	Boston Creek		Pink and Chum ^{2/}
				Pink	
1963	67	1,669			
1964	10	3,315			
1966 ^{3/}	153	761			
1968	7	2,500		2,500	
1969	100	7,000		16,000	
1970	246	8,200		12,900	
1971	42	7,045		80	
1972	57	4,252		3,950	
1973	153	2,882		3,213	
1974	225	2,201		749	
1975	147	1,885		2,556	
<u>Niukluk River</u>					
1962	11				27,879
1963		13,687		4,103	
1964		8,395		10,495	
1966		21,300		8,600	4,700
1967				20,546	
1968					85,125
1969		10,240		92,650	
1970		7,300		60,350	
1971		22,605		8,370	
1972 ^{3/}		10,500		22,600	
1973		14,365		14,790	
1974	4	13,684		9,210	
1975		16,453		10,089	
<u>Fish River</u>					
1961	1				14,100
1962	48				28,918
1963	21				25,728
1964		18,670		10,935	14,550
1966	7				17,955
1967	20				13,510
1968	10				164,000
1969		2,080		124,000	
1970	33	76,550		198,000	
1971	1	13,185		1,670	
1972 ^{3/}		3,616		13,050	
1973	31	6,887		14,364	
1974	3	10,945		15,690	
1975	26	10,742		9,954	

Table 13(cont.). Comparative aerial survey counts of Norton Sound streams, 1961-1975.^{1/}

Year	King	Chum	Pink	Pink and Chum ^{2/}
<u>Kachavik Creek</u>				
1963		16,000	16,000	
1964		5,284	3,675	
1966		758	1,788	
1967 ^{3/}				1,780
1969		600	4,525	
1970		500		
1971		10,000	5,323	
1972		3,100	16,950	
1973		10,325	22,275	
1974		11,645	2,723	
1975		1,735	23,360	
<u>Kwiniuk River</u>				
1962	3			23,249
1963	2	11,340	3,779	
1964		14,533	3,779	
1965 ^{4/}	14	26,634	8,301	
1966 ^{4/}	7	32,786	10,629	
1967 ^{4/}	13	24,444	13,508	
1968 ^{4/}	27	18,813	126,764	
1969 ^{4/}	12	19,687	56,683	
1970 ^{4/}		68,004	235,131	
1971 ^{4/}	37	39,046	16,742	
1972 ^{4/}	65	30,686	62,461	
1973 ^{4/}	57	28,029	37,070	
1974 ^{4/}	62	35,899	40,825	
1975 ^{4/}	42	11,714	54,878	
<u>Tubutulik River</u>				
1962	3			16,690
1963	9	16,069	4,355	
1964		15,469	10,043	3,420
1966		4,363	26,000	
1967	1			22,475
1968		5/	5/	
1969	3	12,040	12,788	3,045
1970		53,290	136,590	
1971		16,820	7,500	5,065
1972 ^{3/}		8,070	21,100	
1973	131	5,383	15,665	
1974	136	9,560	17,940	
1975		15,871	38,003	

^{1/} King salmon count is the "high count" for the season, chum and pink salmon counts collectively taken as "high counts" for season.

^{2/} Surveyor unable to distinguish between the two species.

^{3/} Poor survey conditions or partial survey.

^{4/} Total counts obtained from counting tower.

^{5/} Count not obtained but numbers believed to be similar to Kwiniuk River.

KOTZEBUE AREA

The Kotzebue District includes all waters from Cape Prince Wales northward to Point Hope. In 1975, a near record harvest of 561,700 chum salmon was attained, exceeded only by the record harvest of 634,500 chums in 1974. The 1975 chum salmon harvest is 2.75 times the 1962-1974 annual average harvest level. Comparative catches are presented in Table 14.

The catch of 561,700 includes 10,700 chums harvested in an experimental fishery located at Deering in southern Kotzebue Sound.

A record level of commercial participation occurred as 411 commercial, 215 vessel, and 215 gear licenses (32,100 fathoms of set gill nets) were issued in 1975. This represents a 2, 24 and 13 percent increase respectively compared to 1974.

A problem area presented itself this year due in part to the record number of participants in the commercial fishery and the lack of adequate protection and enforcement effort. At times the responsibility of management and research of the fishery suffered since protection and enforcement activity had to be assumed.

Chum salmon abundance in the Kotzebue management area has been above average for the past six seasons and, as a result of above average escapement indices being attained in the Kobuk and Noatak River drainages, the commercial fishery was opened to seven days a week fishing on August 20 by emergency order.

A subsistence harvest of 27,600 was reported for the Kotzebue area in 1975. Subsistence fishing activity is primarily exercised by the people residing in the villages adjacent to the Kobuk River, which in recent years, harvested approximately 65% annually of the total

subsistence harvest for the Kotzebue area. The 1975 harvest is a slight increase over the 1974 catch by 3 percent but represents a slight decrease of 9 percent from the 1962-73 average harvest of 30,400.

Chum salmon escapement indices recorded for the Noatak and Kobuk River systems were 71 percent above average and almost $2\frac{1}{2}$ times brood year abundance indices. Comparative escapement data is presented for several index streams in Table 15.

Table 14. Commercial and subsistence salmon catches, Kotzebue district, 1914-1975.

Year ^{1/}	Commercial catch			Subsistence catch	Combined catches
	Chum ^{2/}	Other ^{3/}	Total	Chum	
1914	8,550		8,550		
1915	4,750		5,750		
1916	19,000		19,000		
1917	44,612		44,612		
1918	27,407		27,407		
1957 ^{4/}				298,430	
1962	129,948	127	130,075	70,283	200,358
1963	54,445	143	54,588	31,069	85,657
1964	76,499	5	76,504	29,762	106,266
1965	40,034		40,034	30,500	70,534
1966	30,764	1	30,765	35,588	66,353
1967	29,400		29,400	40,108	69,508
1968	30,384 ^{5/}		30,384	20,814	51,198
1969	59,335	48	59,383	29,812	89,195
1970	159,664		159,664	28,486	188,150
1971	154,956	1	154,957	23,959	178,916
1972	169,664	3	169,667	11,085	180,752
1973	375,432	5	375,437	18,942	394,379
1974	634,479 ^{6/}	48	634,527	26,729	661,256
1975	561,710 ^{7/}		561,710	27,605	589,315

^{1/} There was no commercial fishing during 1919-1961.

^{2/} Catches for 1914-1918 from pack data only; numbers of chums estimated at 9.5 per case (48#) and 34 per barrel.

^{3/} Mostly pinks, but includes king salmon and red salmon.

^{4/} Estimated mean annual catches prior to 1957 (study by Raleigh).

^{5/} Corrected from 1968 annual report due to addition of late catches.

^{6/} Includes 6,567 chum salmon harvested from Deering experimental fishery.

^{7/} Includes 10,704 chum salmon harvested from Deering experimental fishery.

Table 15 . Comparative aerial survey chum salmon counts of Kotzebue area streams, 1962-75.

Year	Noatak River <u>1/</u>	Upper Kobuk River <u>2/</u>	Kobuk River Tributaries <u>3/</u>
1962	168,000	23,150	39,827
1963	1,970 <u>4/</u>	4,535	8,940
1964	89,798	7,985	20,047
1965	4,177 <u>2/</u>	2,750	8,730 <u>4/</u>
1966	101,640	1,474	6,690
1967	28,620	2,495	5,618
1968	39,394	2,370	10,936
1969	33,395	7,500	9,434
1970	138,145	13,908	9,418 <u>4/</u>
1971	41,064	17,202	13,465
1972	64,315	18,155	34,199 <u>4/</u>
1973	32,144	2,470 <u>4/</u>	19,236 <u>4/</u>
1974	129,640	27,309	66,978
1975	96,507 <u>4/</u>	10,358	41,821

1/ Mouth to Kelly River.

2/ Kobuk village to Reed River.

3/ Squirrel, Salmon, Tutuksuk Rivers.

4/ Poor survey conditions or incomplete survey.